

REMARKS


Claims 13 and 23 stand rejected under 35 U.S.C. 103(a) as being obvious over Lal in view of Bertero, and further in view of Okumura et al. (U.S. Patent No. 5,700,593). In the remarks section of Amendment D filed June 22, 2004, Applicants traversed the rejection of claims 13 and 23 because the cited references do not disclose or suggest, among other things, that each nucleation site is formed as an aggregation of atoms. More specifically, Applicants asserted that the nucleation sites never form a continuous layer, which contributes to a reduction in size of the crystal grains in the continuous crystal layer covering the surface of the substrate. In addition, Applicants traversed the Examiner's assertion that Ti layers less than 10nm thick would necessarily be discontinuous, and therefore have individual nucleation sites separated from one another.

In support of these assertions, Applicants submit a Declaration of Ryoichi Mukai attesting that a 5nm thick Ti layer does not form nucleation sites spaced apart from one another as a discontinuous layer in a layered polycrystalline structure. Rather, a Ti layer is a continuous layer at a thickness of approximately 1nm. For these additional reasons, Applicants request withdrawal of the §103 rejection of independent claim 13 and its respective depending claim 23.

For all of the foregoing reasons, Applicants submit that this Application is in condition for allowance, which is respectfully requested. The Examiner is invited to contact the undersigned attorney if an interview would expedite prosecution.

Respectfully submitted,

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By 
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July 23, 2004

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PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re U.S. Patent Application)

Applicants: Mukai et al.)

Serial No. 09/812,515)

Filed: March 20, 2001)

Conf. No.: 2232)

For: LAYERED)
POLYCRYSTALLINE)
STRUCTURE AND METHOD)
OF MAKING THE SAME)

Art Unit: 1773)

Examiner: Uhler, N.)

*I hereby certify that this paper is being deposited
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7/23/04

Date

Joseph P. Set
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DECLARATION OF RYOICHI MUKAI

Mail Stop Amendment
Commissioner for Patents
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I, Ryoichi Mukai, declare that:

1. I am the applicant of the above-identified patent application.
2. I received a Bachelor of Science at Tokai University in 1977, a Master of Science at Tokai University in 1979, and a Ph.D. at Tokai University in 1988.
3. I am a member of the Magnetism Society of Japan.

4. I have been employed by Fujitsu Limited of Japan for the last 22 years.

In my career, I have worked with many engineers working in the field of Layered Polycrystalline Structures, having all levels of experience.

5. I have read the above-identified application.

6. Page 23, line 23 of Applicants' specification discloses that an ultrathin film is formed in a sputtering apparatus that forms Cr atoms at a thickness of 1.0nm. This ultrathin film results in nucleation sites being formed that are spaced from one another on a surface of a substrate so that the nucleation sites never form a continuous layer. This statement is based upon my experience in the art of Layered Polycrystalline Structures. The discontinuous nucleation sites contribute to a reduction in size of the crystal grains in a continuous crystal layer covering the surface of the substrate.

7. In my opinion, a 5nm thick Ti layer does not form nucleation sites spaced apart from one another as a discontinuous layer in a layered polycrystalline structure. A Ti layer is a continuous layer at a thickness of approximately 1nm. This statement is based upon my experience in the art of Layered Polycrystalline Structures.

8. All the statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United

States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

July 14, 2004

Ryoichi Mukai
Ryoichi Mukai